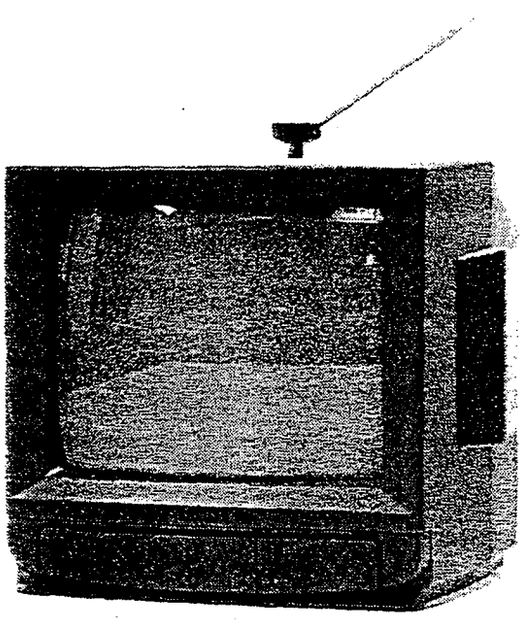
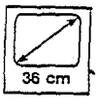
Watson

H046

Service Manual

FA 3610





KiVi Service G m b H
Windmühlenstraße 41
31178 Giesen/Emmerke

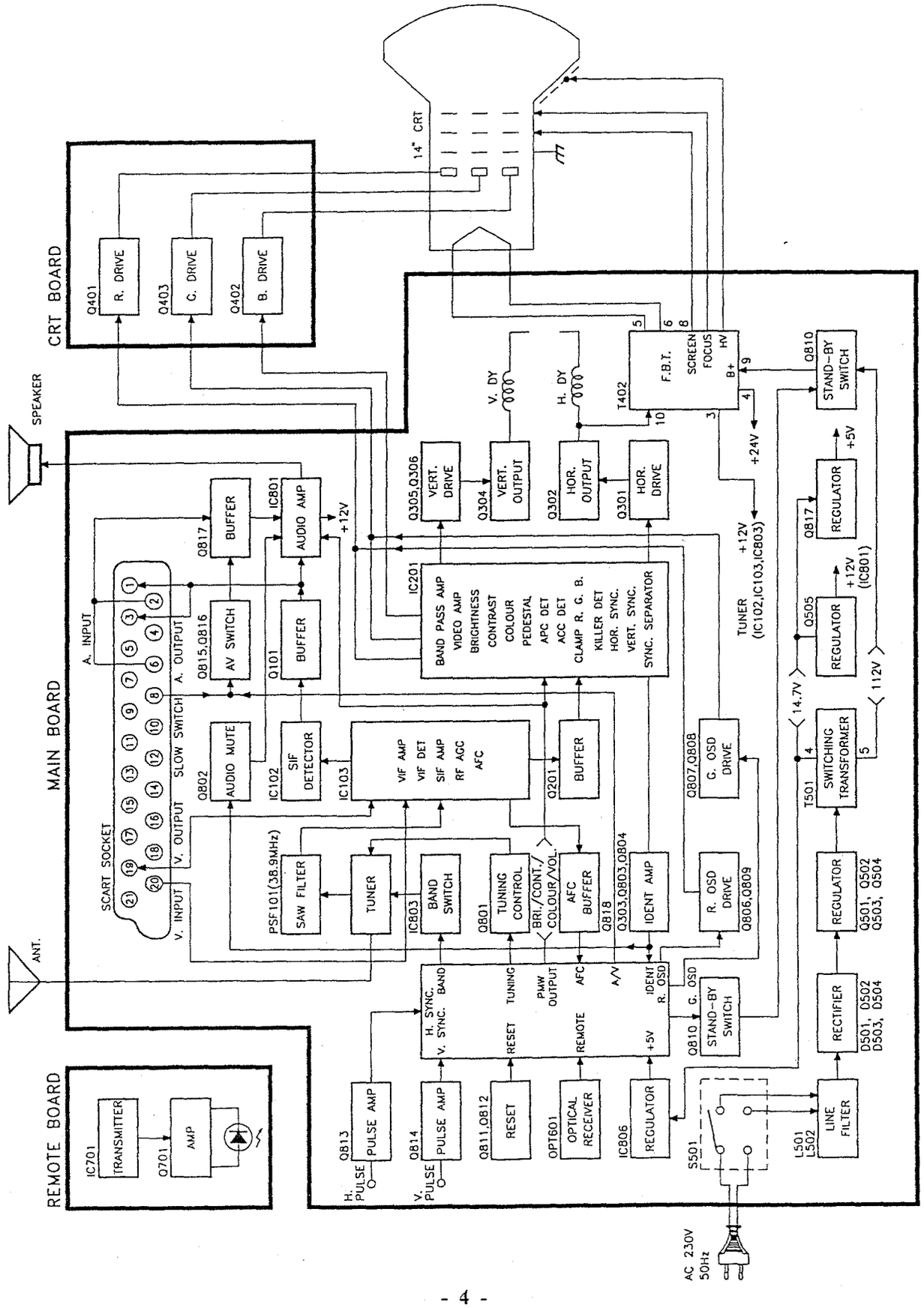
Ersatzteile und Zubehör

Telefon: 05121-60020 FAX: 05121-600254

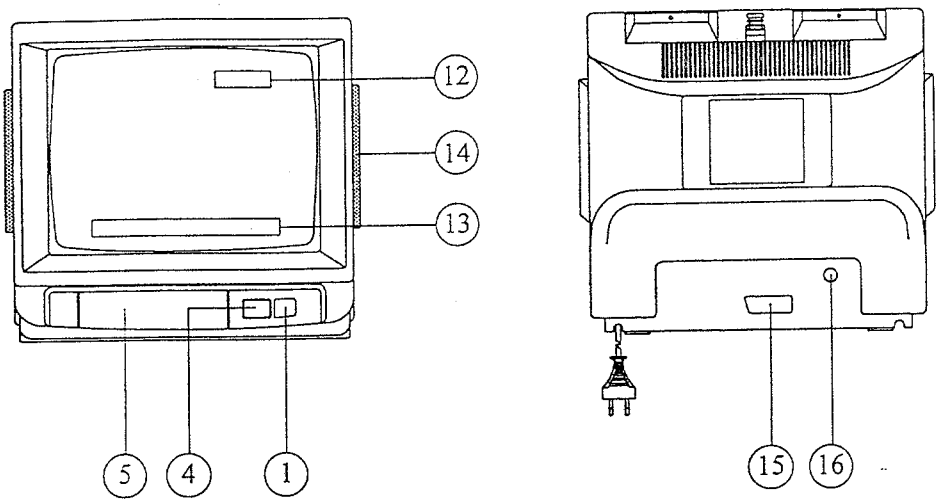
	Stückliste	H046
	Watson FA 3610	K7652
KiVi Art. Nr.	Bezeichnung	Verständnis Gruppe
	DREHPOTI LAUTSTÄRKE	00100000
784835	EINSTELLREGLER 10KOHM STEHEND	00100000
784833	EINSTELLREGLER 1KOHM LIEGEND	00100000
784836	EINSTELLREGLER 200KOHM LIEGEND	00100000
784837	EINSTELLREGLER 200R STEHEND	00100000
784834	EINSTELLREGLER 20KOHM LIEGEND	00100000
784832	EINSTELLREGLER 5KOHM	00100000
477327	EINSTELLREGLER 10KOHM LIEGEND	00100000
784831	THERMISTOR PTC18	00100000
290942	2,7K-0,5W SICHERHEITSWID.	00100000
668191	4,3R-0,7W SICHERHEITSWID.	00107040
668590	4,7R-1,4W SICHERHEITSWID.	00107050
785176	ELKO 100UF-160V	00200000
785177	ELKO 100UF-400V	00200000
785178	ELKO 47UF-160V	00200000
785172	KONDENSATOR 1000PF-2KV	00200000
785173	KONDENSATOR 1500PF-2KV	00200000
785175	KONDENSATOR 2200PF-1KV	00200000
785171	KONDENSATOR 2200PF-2KV	00200000
785174	KONDENSATOR 5600PF-1,5KV	00200000
242860	1000PF-2000V IMPULSK.	00201060
784870	HORIZONTALTREIBERTRAFO	00300000
784869	WANDLERTRAFO	00300000
784872	ZEILENTRAFO	00300000
783240	FERNBEDIENUNG FA3610	00400000
784164	NETZSCHALTER	00700000
785162	SCHIEBESCHALTER 2FACH 2x3PIN	00700000
785163	TASTSCHALTER 1X4PIN	00700000
784857	BILDRÖHRE 370KR8	00900000
319824	2SC2482 TRANSISTOR	01000000
30128	BSX20 TRANSISTOR	01000000
784838	TRANSISTOR	01000000
784843	TRANSISTOR 2SC2703Y	01000000
784841	TRANSISTOR 2SD1545	01000000
117317	BU508AF TRANSISTOR 16C	01002210
621526	2SA1015GR TRANSISTOR 7C	01005010
99254	2SD1554 TRANSISTOR 18J	01005040
784845	DIODE 1S18535	01100000
785186	IR-SENDER DIODE	01100000
784847	TVR DIODE	01100000
87270	12V-1,3W ZENERDIODE 31A	01101020
783651	AN240 IC	01500000
784848	M3400N4-012SP IC BED.TEI PROZ.	01500000
398790	M50560001P IC	01500000
784850	TDA8403K IC	01500000
120010	IC TV,NF-V-END. SIL9	01501010
169050	TA8403K IC SIP7	01526010

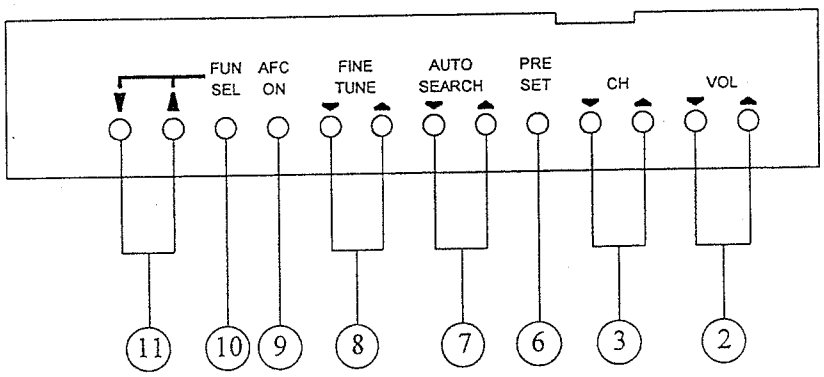
441224	TA8718N IC	01526010
115663	IC: uPC 574 7J	01536010
292885	TDA2549 IC	01563010
785185	TELESKOPANTENNE	02500000
335715	503KHZ FILTER	02800000
784863	FILTER 710395	02800000
784861	FILTER 802906	02800000
784862	FILTER 802947	02800000
784864	FILTER 802949C	02800000
784860	KERAMIK-FILTER M5.5T	02800000
784858	OFW10378 FILTER	02800000
785166	SCARTBUCHSE	03300000
785167	STECKER 3PIN	03300000
785165	BILDRÖHRENSOCKEL M. ABDECKUNG	03303000
627023	S-FA3610 WATSON	03702010
462363	ABSTANDHALTER	04200000
785189	BILDRÖHRENHALTER	04200000
784514	HALTER LED	04200000
784856	IR-EMPFÄNGER	04300000
785179	BEDIENTEILKLAPPE	05300000
785170	BEDIENTEILRAHMEN	05300000
785181	BLENDE IR-FENSTER U. NETZSCHALTER	05300000
785183	FUNKIONSBLENDE	05300000
785168	GEHÄUSE RÜCKWAND	05300000
785169	GEHÄUSEFRONT	05300000
785180	LAUTSPRECHERGRILL	05300000
785188	RÜCKWANDHALTER OBEN	05300000
785182	ZIERTEIL BLENDE LINKS	05300000
784515	ZIERTEIL-TYPENSCHILD WATSON	05300000
789649	CDE3308 ANSCHLUKABEL Z. STE	05910000
784873	LAUTSPRECHER	06200000
784852	VERZÖGERUNGSLEITUNG Y BL50A	06300000
784853	VERZÖGERUNGSLEITUNG Y CSEN64	06300000
785187	B-FA3610 FFS WATSON	13700000
785192	2900KKC TUNER	14300000
786047	TUNER 3300KHC	14300000
784865	200UH SPULE, L505	20000000
784867	30UH SPULE, L801	20000000
784866	68UH SPULE, L114, L209	20000000
784871	NETZDROSSEL	20000000
786171	SPULE L204	20000000
784868	SPULE MIT KERN	20000000
785184	KONTRAST KNOPF	20100000
785191	VERLÄNGERUNG F. NETZSCHALTER	20100000
861144	NETZKABEL BLANKES ENDE	20300000
785190	FEDER TASTKOPF	21000000

BLOCK DIAGRAM



OPERATING CONTROL





1. Main Power Switch
2. Volume Control Up/Down
3. Programme Up/Down
4. Infrared Sensor
5. Tuning Compartment Door
6. Preset
7. Auto Search Up/Down
8. Fine Tune Up/Down AFC OFF
9. AFC ON
10. Function Select (Colour/Contrast/Brightness)
11. Function Up/Down
12. Programme Position Indication (0 to 43/Video)
13. Function Indication (Up/Down - 32 Step)
    (Colour/Contrast/Brightness)
    (Volume/Preset/Fine)
14. Speaker
15. Scart Socket
16. 75Ω Aerial Socket

ALIGMENT INSTRUCTION

PLEASE READ BEFORE ATTEMPTING SERVICE

1. Never disconnect any leads while receiver is in operation.
2. Disconnect all power before attempting any repairs.
3. Do not short any portion of the circuit while power is on.
4. For safety reasons, all parts replaced should be identical, (for parts and part numbers see parts list).
5. Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

TEST EQUIPMENT

1. VIF Sweep Generator
2. SIF Sweep Generator
3. Colour Bar/Dot/Cross Hatch Generator
4. DC Power Supply (17V)
5. Oscilloscope
6. Vacuum Tube Voltmeter
7. Voltage Meter
8. High Voltage Meter
9. Ampere Meter (0.5 Class, DC 3mA Max.)
10. Demagentizing Coil
11. Philips Pattern Generator
12. Frequency Counter
13. Continuous Waveform Generator
14. 21 Pin Connector

A. VIF TANK COIL ALIGNMENT

1. Connect output lead of VIF SWEEP GENERATOR between test point TP and tuner case.
2. Connect lead of FROM DET between L111 and GND.
3. Supply DC+16.5V to (+) lead of C303.
4. Supply DC+7.5V RF AGC bias voltage to PIN 4 of IC103. (see Fig. 1)

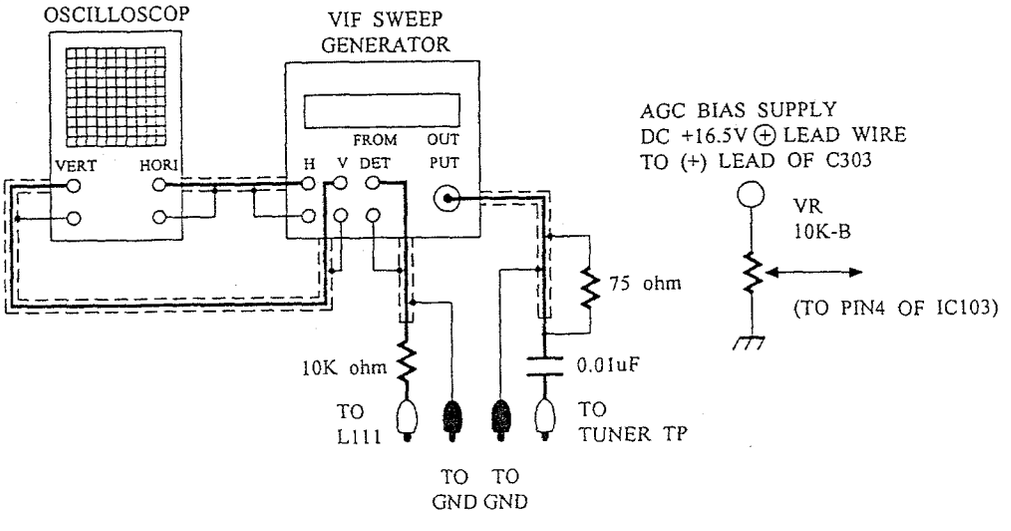
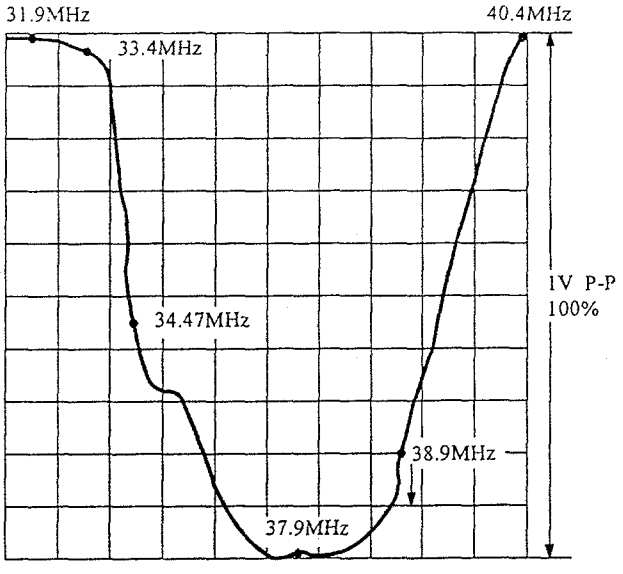


Fig. 1

5. Set VIF SWEEP GENERATOR output level in about 80dB ±3dB.
6. Increase the output level of VIF SWEEP GENERATOR step by step to achieve 1V p-p output on oscilloscope.
7. Adjust L112 to obtain maximum amplitude of response at 38.9MHz as in (Fig. 2).



MARKER FREQUENCY	
1	31.9MHz
2	33.4MHz
3	34.47MHz
4	37.9MHz
5	38.9MHz
6	40.4MHz

Fig. 2

B. MATCHING COIL ALIGNMENT

1. Connect output lead of VIF SWEEP GENERATOR between test point TP and tuner case. Set output level in about 80dB ±3dB.
2. Connect lead of FROM DET between L111 and GND.
3. Connect resistor (100 ohm) between TP1 and TP2 of IC103.
4. Supply DC +16.5V to (+) lead of C303.
5. Supply DC +7.5V RF AGC bias voltage to PIN 4 of IC103.
6. Adjust L106 to obtain the waveform as in (Fig. 3).

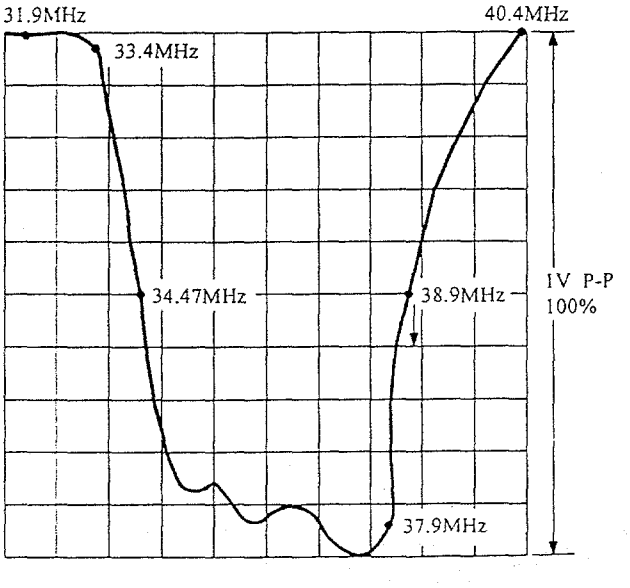


Fig. 3

C. AFC ALIGNMENT

1. Remove the damping resistor (100 ohm) at TP1 and TP2 of IC103.
2. Connect output lead of SWEEP GENERATOR to tuner point TP and tuner case.
3. Connect lead of DET between PIN 15 of IC103.
4. Supply DC +16.5V to (+) lead of C303.
5. Supply DC +7.5V RF AGC bias voltage to PIN 4 of IC103.
6. Adjust L113 so that picture carrier 38.9MHz is centered as in (Fig. 4).

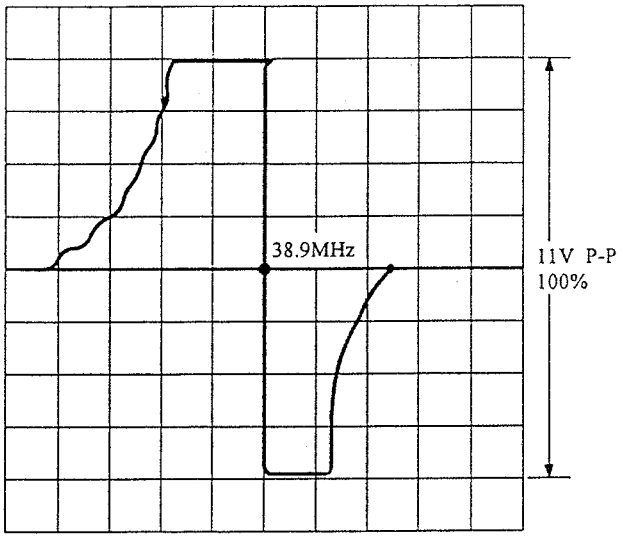


Fig. 4

D. SIF ALIGNMENT

1. Connect output lead of SIF SWEEP GENERATOR between PIN 1 of IC102 and GND (input level 110dB).
2. Connect lead of FROM DET between PIN 8 of IC102 and GND.
3. Supply DC +16.5V to (+) lead of C303.
4. IC103 PIN 4 to GND. (see Fig. 5)
5. Adjust L104 that sound carrier is centered as in (Fig. 6).
6. Adjust output of SWEEP GENERATOR to achieve 5.5V p-p between markers of ±100KHz.

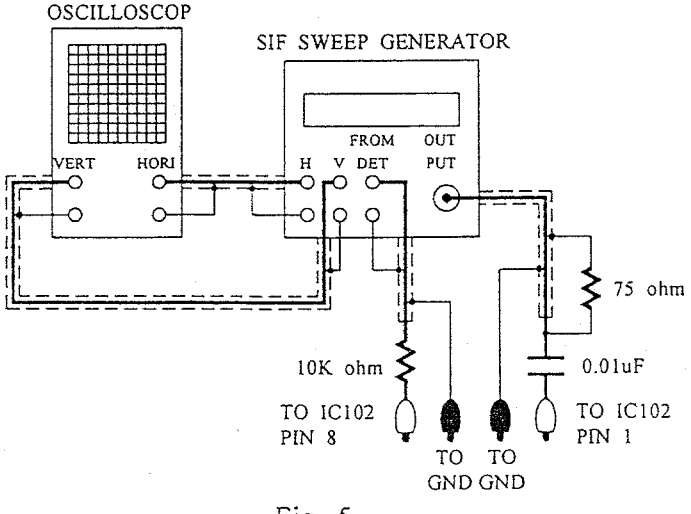


Fig. 5

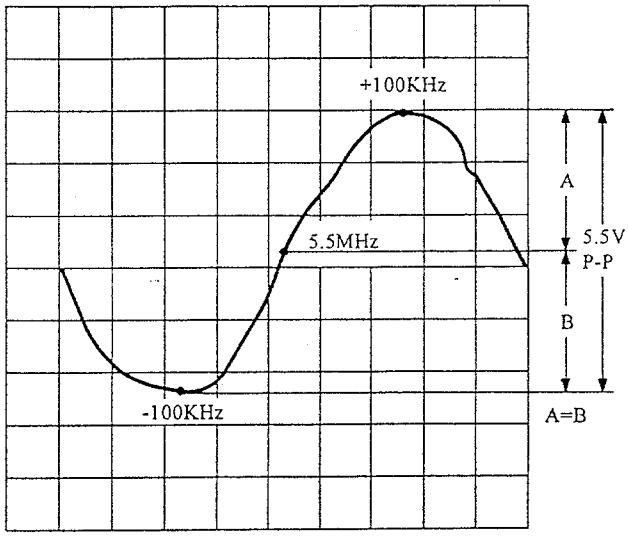


Fig. 6

E. SOUND TRAP ALIGNMENT

1. Connect output lead of SIF SWEEP GENERATOR between PIN 1 of IC103 and GND.
2. Connect lead of FROM DET between IC103 PIN 24 with detector as in (Fig. 7).
3. Disconnect all power from board.
4. Set SIF SWEEP GENERATOR output in about 110dB. (±100KHz deviation)
5. Adjust L109 to obtain response cause as in (Fig. 8).

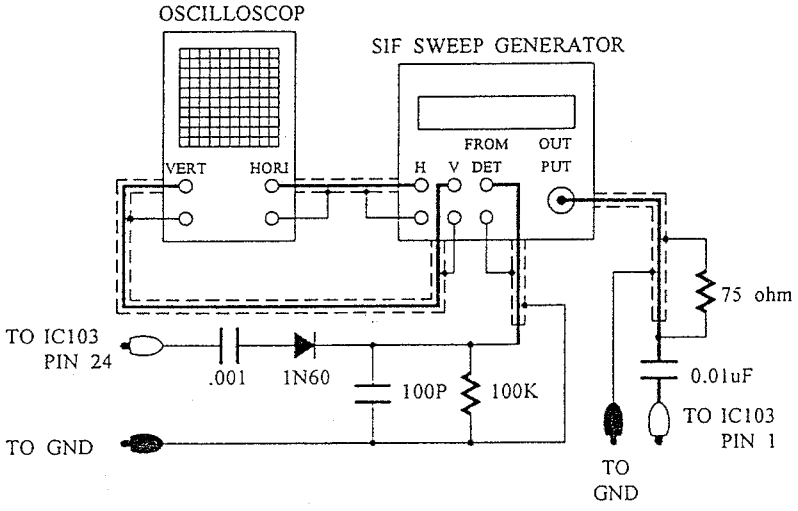


Fig. 7

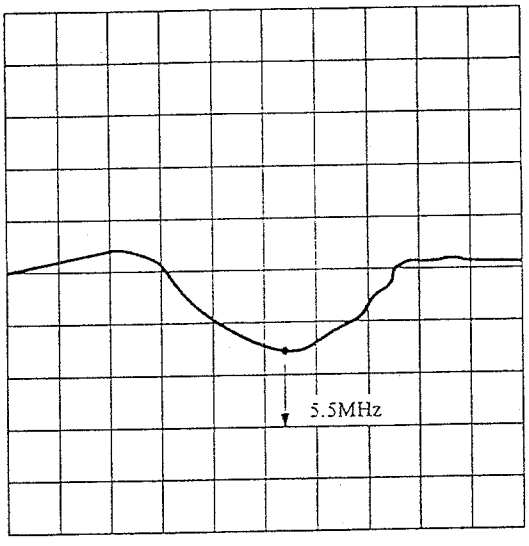


Fig. 8

F. B+ ADJUSTMENT

1. Connect the digital voltmeter to (+) lead of C518.
2. Adjust semi-fixed resistor VR501 until meter reading DC112V ±0.5V.

G. VERTICAL CIRCUIT ADJUSTMENT

1. Receive the monoscope pattern.
2. Adjust V-SIZE (VR202) to obtain a normal picture.

H. FOCUS ADJUSTMENT

1. Set CONTRAST control to middle position and BRIGHTNESS control to middle position.
2. Adjust FOCUS control (on the FBT) to obtain a sharpest picture on CRT.

I. RF AGC ADJUSTMENT

1. Receive the signal of UHF channel.
2. Set the input field strength in 62 ±3dB.
3. Adjust RE AGC control (VR101) to the point where noise is disappeared.

J. COLOUR DEMODULATOR ADJUSTMENT

1. Receive PHILIPS pattern.
2. Set COLOUR control to maximum position.
3. Set CONTRAST control to middle position.
4. Set BRIGHTNESS control to middle position.
5. Connect oscilloscope to PIN 4 of CN105 socket.
6. Adjust L204 to obtain the waveform as in Fig. 9.
7. Adjust VR201 to obtain the waveform as in Fig. 9.

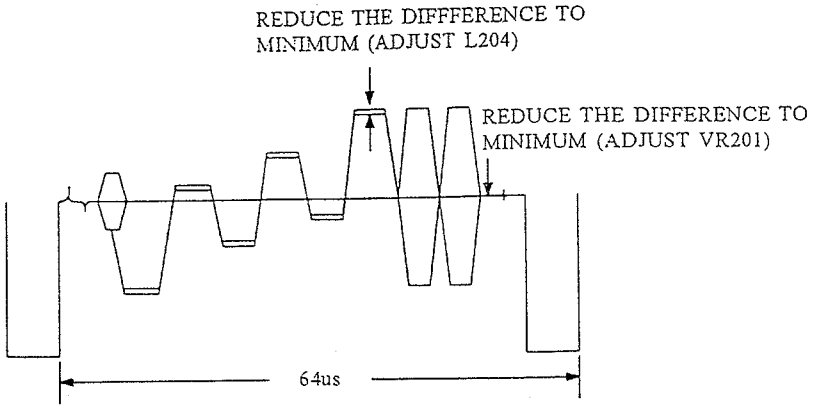


Fig. 9

K. ON SCREEN ADJUSTMENT

1. Receive the monoscope pattern.
2. Adjust on screen VR801 for adjust the lettering to center of CRT.

L. COLOUR PURITY ADJUSTMENT

BEFORE ANY ADJUSTMENTS DESCRIBED BELOW ARE ATTEMPTED, V-HOLD, H-HOLD, V-HIGH, B+ VOLTAGE AND FOCUSING ADJUSTMENT MUST BE COMPLETED.

1. Place the TV receiver facing NORTH or SOUTH.
2. Plug in TV receiver and turn it on.
3. Operate the TV receiver over 30 minutes.
4. Fully degauss the TV receiver by using an external degaussing coil.
5. Receive a crosshatch pattern and adjust the static convergence control roughly.
6. Lossen the clamp screw of the deflection yoke and pull the deflection yoke towards you.
7. Fully turn the red and blue LOW LIGHT (VR402, VR405, VR404) controls counter clockwise.
8. Adjust the purity magnets so that green field is obtained at the center of the screen.
9. Slowly push the deflection yoke towards bell of CRT and set it where a uniform green field is obtained.
10. Tighteen the clamp screw of the deflection yoke as in Fig 10.

M. CONVERGENCE ADJUSTMENT

1. Receive a dotted pattern.
2. Unfix the convergence magnet clamper and align red with blue dots at the center of the screen by rotating (R,B) static convergence magnets.
3. Align red/blue with green dots at the center of the screen by rotating (RB-G) static convergence magnet.
4. Fix the convergence magnets by turning the clamper.
5. Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good overall convergence.
6. Fix the deflection yoke by wedges as in Fig. 10.
7. If purity error is found, follow "PURITY ADJUSTMENT" instructions.

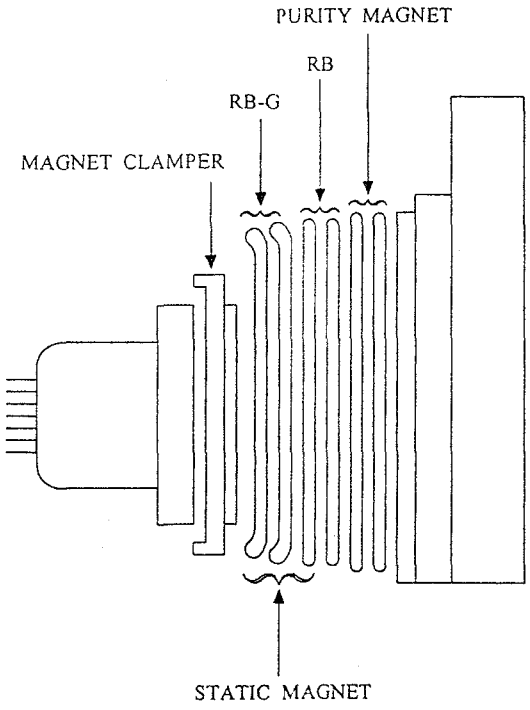


Fig. 10

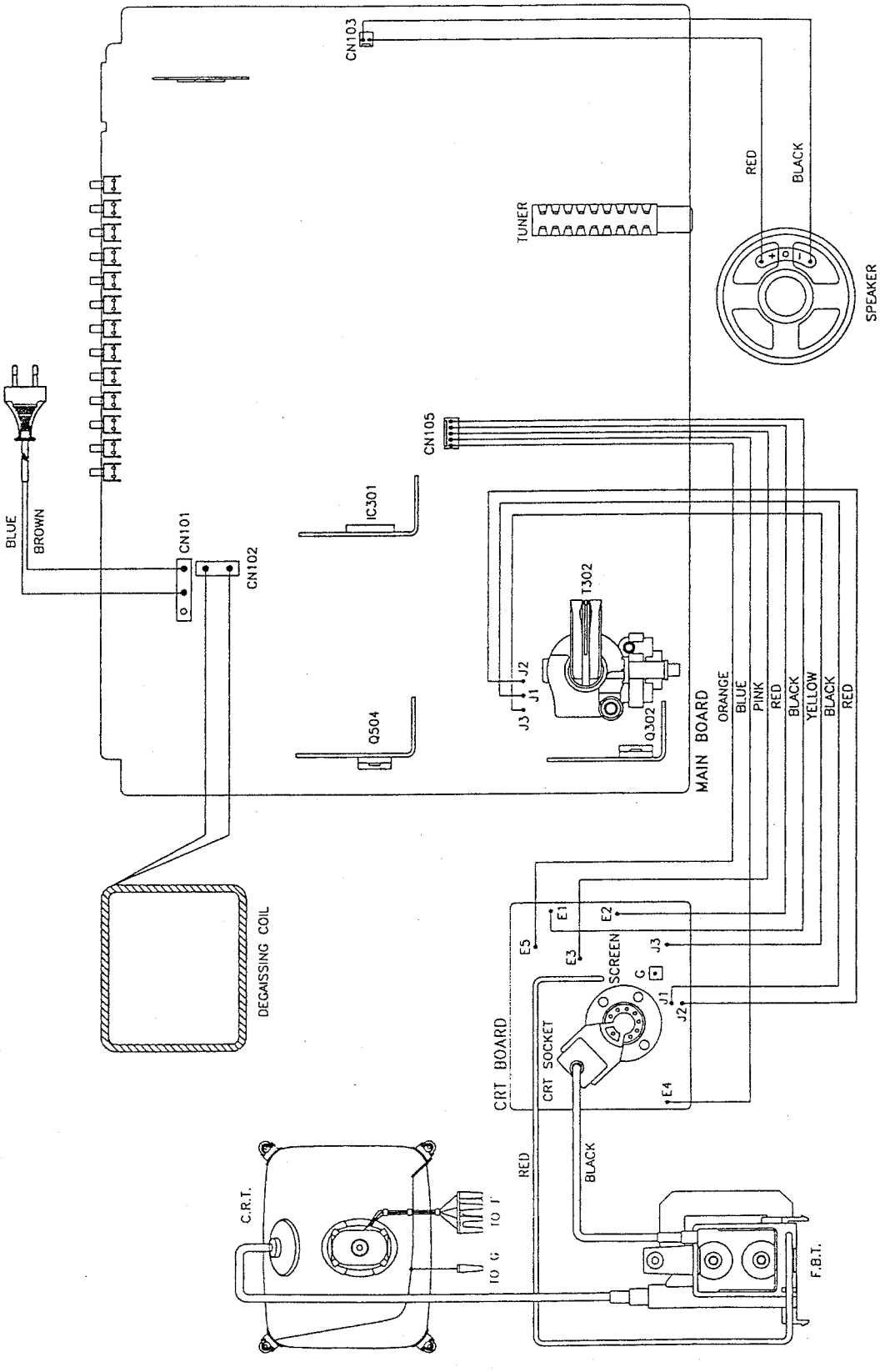
N. WHITE BALANCE ADJUSTMENT

1. Receive the monoscope pattern.
2. Set CONTRAST and BRIGHTNESS control to middle position.
3. Set COLOUR to minimum position.
4. Set TV to AV mode.
5. Set the screen control (on the FBT) to minimum position.
6. Turn the red, green and blue LOW LIGHT (VR402, VR405,VR404) controls to middle positon and turn the DRIVE (VR401, VR403) controls to middle position.
7. Turn SUB-BRIGHTNESS (VR203) to middle position.
8. Set the SERVICE switch (S201) to "SERVICE" position.
9. Slowly turn the screen control clockwise to the point where a horizontal line just illuminates.
10. Adjust VR402 to get a red horizontal line on CRT.
11. Adjust VR405 to get a yellow horizontal line on CRT.
12. Adjust VR404 to get a white horizontal line on CRT.
13. Reset the SERVICE switch (S201) to normal position.
14. Adjust DRIVE (VR401, VR403) controls to obtain a uniform white picture.

O. SUB-BRIGHTNESS ADJUSTMENT

1. Receive COLOUR BAR pattern.
2. Set controls as follows
   BRIGHTNESS controls ———— MIN position
   CONTRAST controls ———— MAX position
   COLOUR controls ———— MIN position
3. Adjust SUB-BRIGHTNESS (VR203) control to get the 5 step of the grey scale just illuminates.

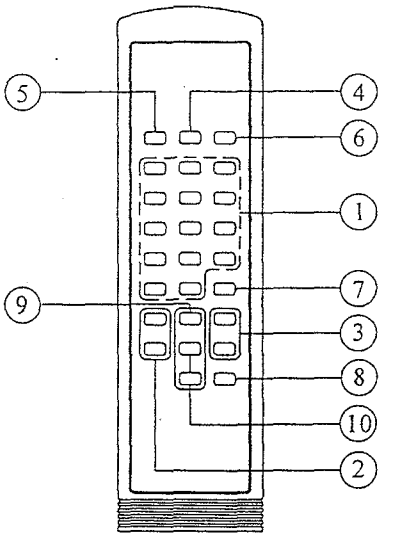
WIRING DIAGRAM



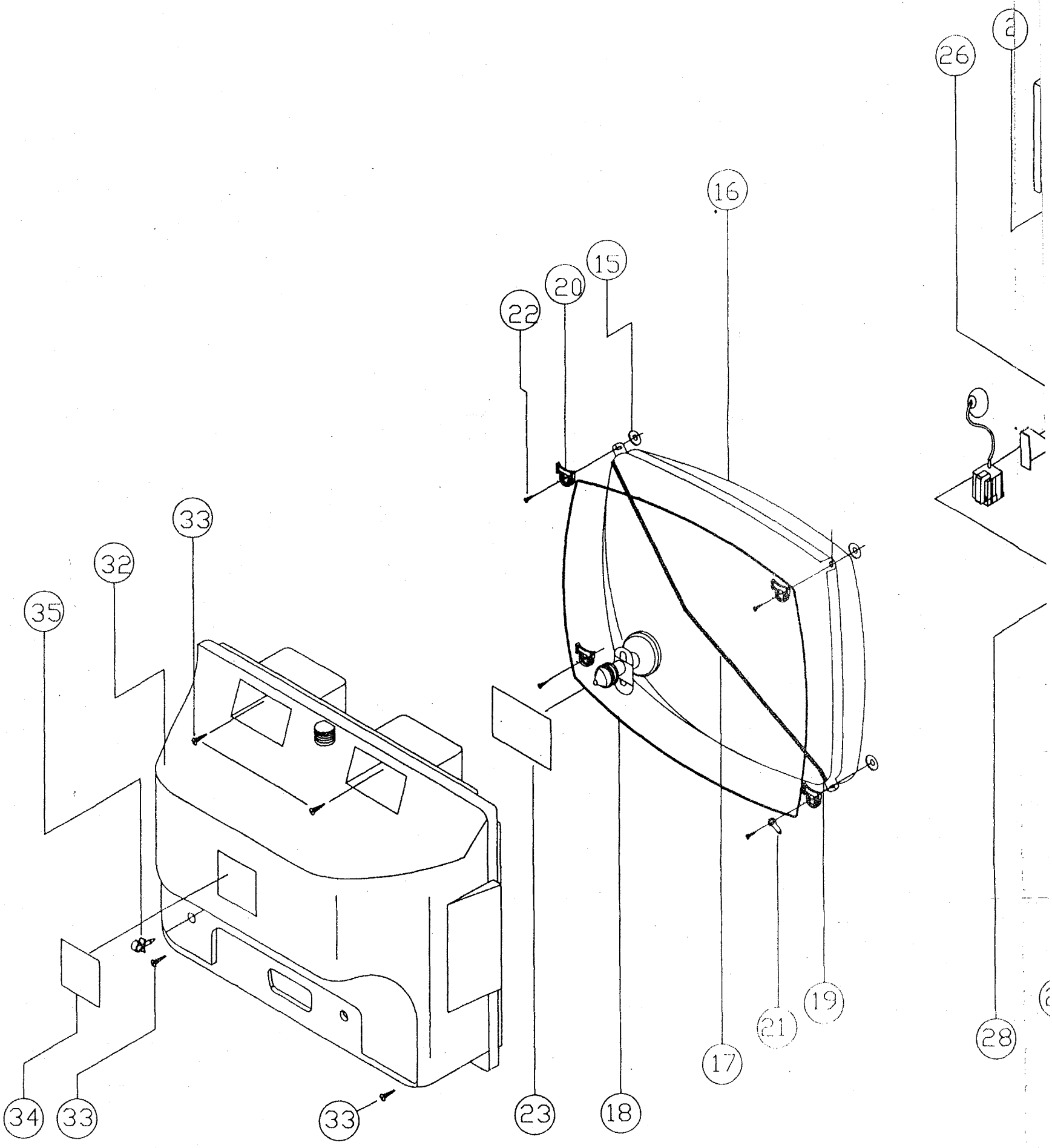
REMOTE CONTROL UNIT

CONTROL LOCATION

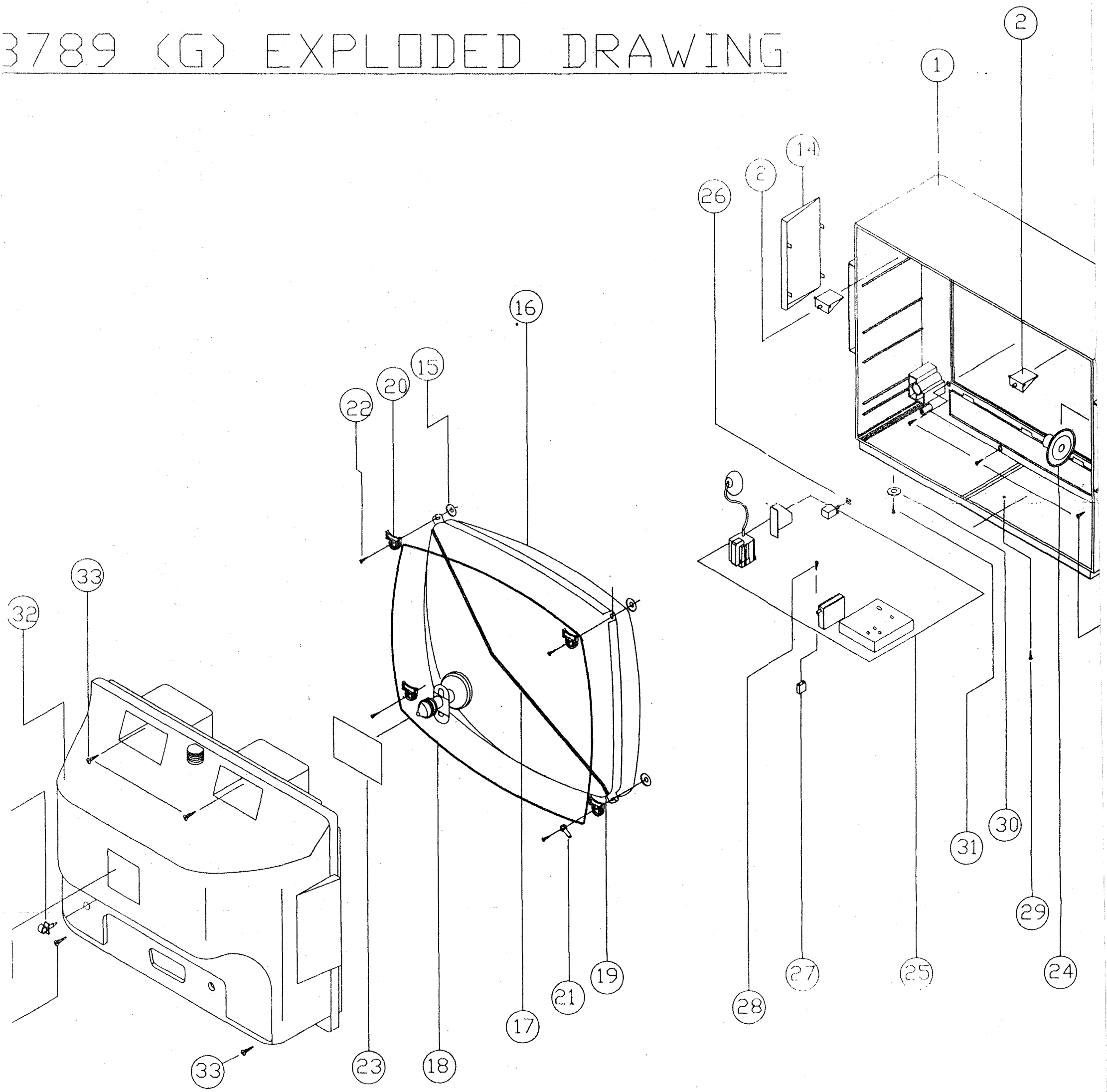
1. Channel Selection
2. Porgramme Up/Down
3. Volume Control Up/Down
4. TV/Video Select
5. Power On/Off
6. Off Time Setting
7. Sound Muting
8. Recall
9. Function Select
10. Function Select Up/Down



SC3789 (G) EXPLODED DRAWING



3789 (G) EXPLODED DRAWING



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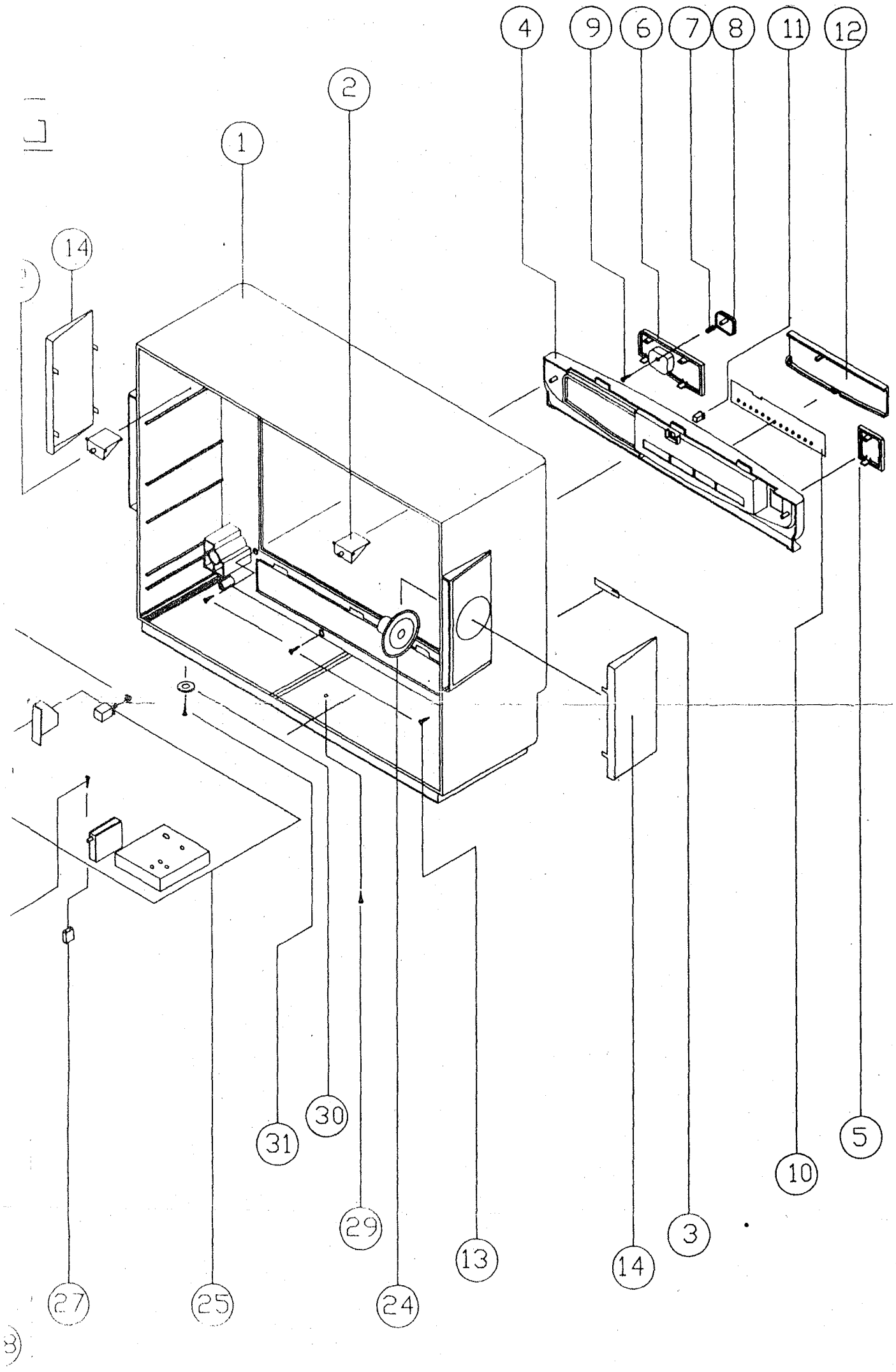


FA 3610

SCHEMATIC DIAGRAM FOR PAL B/G

MAIN BOARD

SPEAKER 8 OHM 1.5W

CRT BOARD

14" CRT

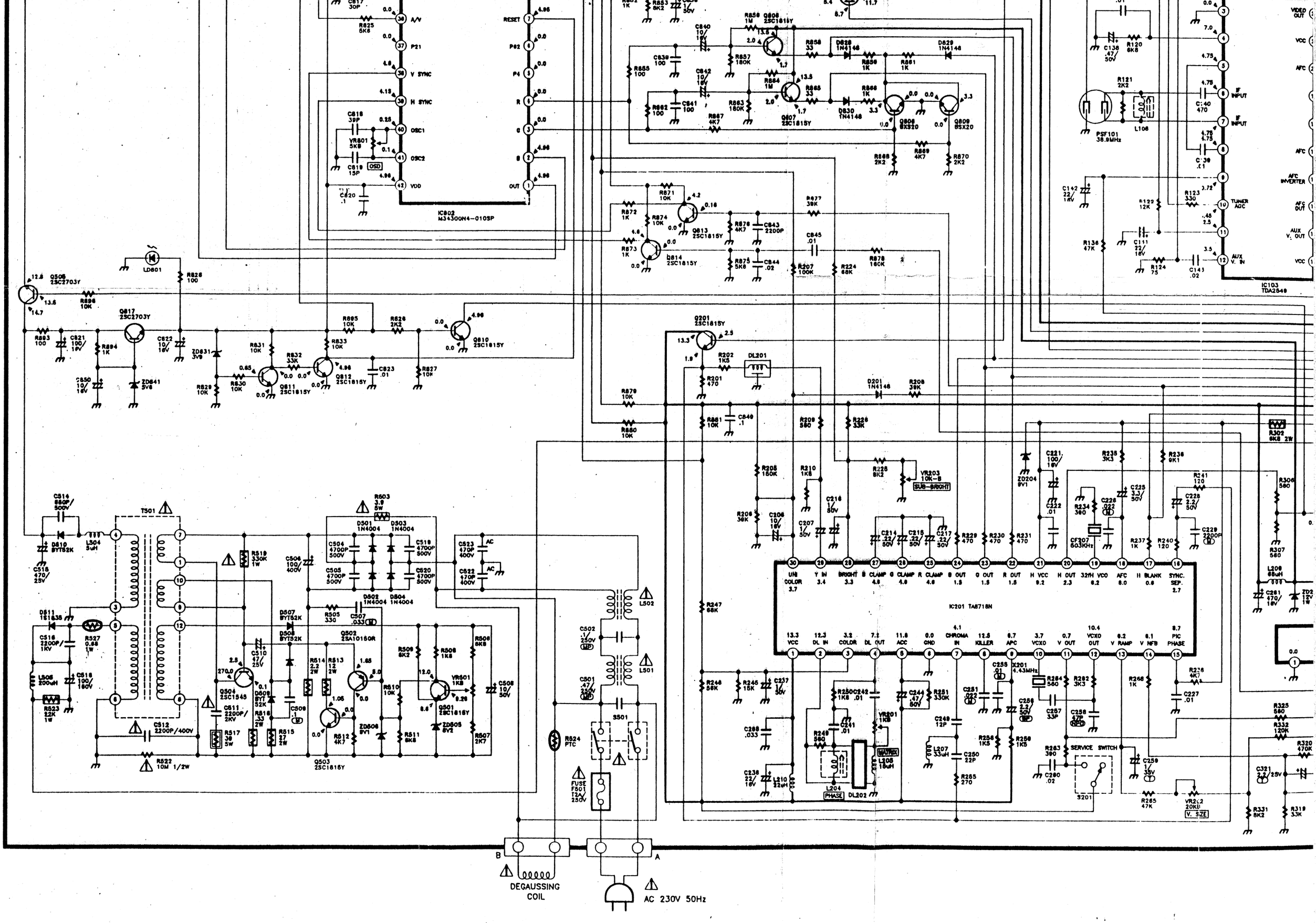
HANDSET BOARD

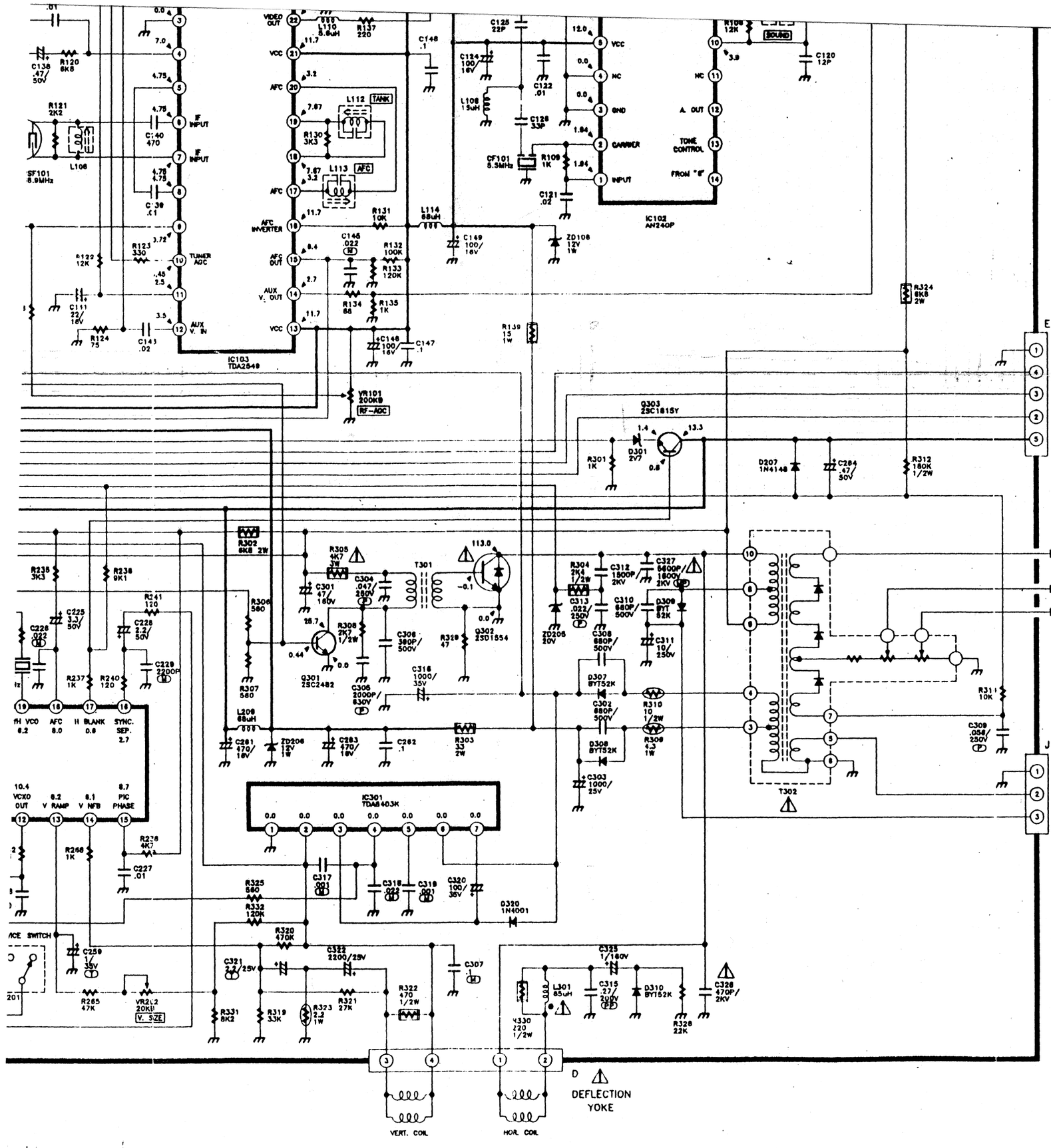
IC801 AN5265

IC102 AN240P

IC103 TDA2849

IC701 M50560-001P


IC802
M34300N4-010SP
IC103
TDA2549
IC201 TA8718N
Q506 2SC2703Y
Q817 2SC2703Y
Q504 2SC1545
Q503 2SC1815Y
Q502 2SA1015GR
Q501 2SC1815Y
Q811 2SC1815Y
Q812 2SC1815Y
Q810 2SC1815Y
Q813 2SC1815Y
Q814 2SC1815Y
Q807 2SC1815Y
Q808 2SC1815Y
Q809 BSX20
Q806 BSX20
Q201 2SC1815Y
LD801
PSF101 38.9MHz
L106
DEGAUSSING COIL
AC 230V 50Hz
FUSE F501 12A/ 250V
SERVICE SWITCH
SUB-BRIGHT
V. SIZE
PHASE
MATRIX
DL201
DL202
CF307 503KHz
X201 4.43MHz
VIDEO OUT
IF INPUT
TUNER AGC
AUX V. IN
AUX V. OUT
AFC INVERTER
UNI COLOR 3.7
Y IN 3.4
BRIGHT 3.3
B CLAMP 4.8
G CLAMP 4.8
R CLAMP 4.8
B OUT 1.5
G OUT 1.5
R OUT 1.5
H VCC 9.2
H OUT 2.3
32fH VCO 6.2
AFC 8.0
H BLANK 0.8
SYNC. SEP. 2.7
VCC 13.3
DL IN 12.3
COLOR 3.2
DL OUT 7.2
ACC 11.8
GND 0.0
CHROMA IN 4.1
KILLER 12.5
APC 8.7
VCXO 3.7
V OUT 0.7
VCXO OUT 10.4
V RAMP 6.2
V NFB 6.1
PIC PHASE 8.7



CIRCUIT SYMBOLS

RESISTOR	CAPACITOR	
NONFLAMMABLE	ELECTROLYIC	POLYPROPYLENE
FUSEBLE	BI-POLAR ELECTROLYIC	MYLAR
CEMENT	TANTALUM	
METAL OXIDE	METALLIZED POLYESTER	
THERMISTOR	POLYESTER FILM	

NOTE:

(1) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED. ALL CAPACITORS ARE 50wv UNLESS OTHERWISE NOTED.
(2) CAPACITOR NOT SPECIFICALLY DESIGNATED ARE CERAMIC CAPACITORS.
(3) ALL RESISTORS ARE IN OHM 1/4 WATT UNLESS OTHERWISE NOTED.
(4) RESISTOR NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS.
(5) DC VOLTAGE ARE MEASURED FROM POINTS INDICATED TO THE CIRCUIT GROUND WITH A DIGITAL MULTIMETER TEST.
(6) WAVEFORMS ARE TAKEN WITH SETTING CONTROLS TO A NORMAL CONDITIONS (COLOR PHILIPS PATTERN).
(7) THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
(8) ⚠ SAFETY CRITICAL DEVICE.

SANTON INDUSTRIAL CO., LTD.	
TITLE: SCHEMATIC DIAGRAM	
MODEL: SC3789	SYSTEM: PAL B/G
DRAW NO: 3789-03	COUNTRY:
DRAWN BY:	APPROVED BY:
DATE: OCT 28, 1994.	REV NO: